Connected by sea, disconnected by tuna? Challenges to regionalism in the Southwest Indian Ocean

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Abstract

Madagascar, Mauritius and Seychelles are at the center of industrial tuna extraction in the southwest Indian Ocean. Tuna, a migratory species, travel through the national waters of multiple countries as well as the high seas. This tuna fishery attracts distant water fleets from Spain, France, Japan, and Korea. This paper investigates how the southwest Indian Ocean tuna fishery intersects with regionalism, defined as both the construction of a regional identity and collaboration between countries. We show that while a discourse of regionalism between the three islands is prominent in initiatives such as the Indian Ocean Commission's promotion of an 'Indianoceanic identity', the possibilities of regionalism cooperation face deep challenges in relation to the regional tuna industry. We argue that this is due to three factors. First, local perceptions, especially amongst those working in and on the tuna industry in the three islands, are in disconnection with an 'Indianoceania' vision. Second, the geopolitics between coastal states and distant water fishing nations create various entanglements including through fishing access revenue and foreign aid. Finally, the materiality of tuna and its migration patterns can at times create competition as countries seek to individually maximize benefits from the industry. While tuna is considered to be the region's "blue gold", we argue that the active reinforcement of regional identity and collaboration around this resource among the three islands is necessary to sustain local benefits into the future and ensure the development of a regional vision for the fishery.

Key words: tuna, regional political ecology, fisheries, Indianoceania, regional cooperation, Madagascar, Mauritius, Seychelles/.

1. Introduction

The countries of the Southwest Indian Ocean (SWIO) are involved in various forms of regional collaborations, including through the Indian Ocean Commission (IOC). A stated objective of the IOC is to contribute to the building of an 'Indianoceania' identity, promoted as a "regional consciousness of belonging to a common space and a community of island destiny" (IOC, 2013 p. 94). To this end, the IOC, as the coordinating agency in the region, has established four strategic pillars – diplomacy, security, environment and identity building – around which countries can mutually contribute to the sustainable development of the region.

Tuna resources are one of the shared assets of the 'Indianoceania'[1], producing around 10% of the global catch of commercial tuna species and considered one of the pillars of blue economy in the region (Doyle, 2018). The catch of yellowfin and skipjack was 540,000 tonnes in 2011, out of a global catch of 4.6 million tons (POSEIDON et al. 2014). Several species of tuna are present in the region, migrating between the different Economic Exclusive Zones (EEZs) of the SWIO countries and the high seas. These include the highly commercial species such as albacore, bigeye, skipjack and yellowfin, as well as coastal tuna such as bonitos and frigate tuna that are mainly caught by small-scale fishers and as bycatch in industrial fishing (POSEIDON et al., 2014; van der Elst and Everett, 2015). In the 'Indeanoceania' region and especially the three islands studied, tuna is an important source of trade, employment and foreign revenue. Distant Water Fishing Nations (DWFNs), such as those of the European Union, Japan and Korea, play a major role in the SWIO region. Local tuna fishing, artisanal and semi-industrial, is also an important source of livelihoods and food security, but with catches that are less substantial in quantity (no more than 1,000 Mt/year) than in other countries of the Indian Ocean such as Indonesia, Iran or Sri Lanka.[2] However, in contrast to the Western Central Pacific region where tuna fisheries

[1] Other highly migratory species such as marlin, sailfish and swordfish are also an important component of fisheries management in the SWIO region, as referred to Article 64 of the Convention on the Law of the Sea on regional cooperation for conservation and optimum utilization of highly migratory species. However, these species are beyond the scope of this paper as in the three countries studied, their catches are much lower than those of tuna species – less than 10% in volume of catches within the EEZs (GoMu 2017a; SFA 2016; USTA 2017).

[2] The three countries studied also have an active sport fishing of tuna and billfishes but this fishery has been less studied and catches are believed to be insignificant in volume compared to catches from industrial purse seine and longline fleets.

have been a key driver for cooperation and a catalyst for a shared regional identity between the island countries (Hanich et al., 2010; Miller et al., 2014; Tarte, 2014), regional integration through tuna fisheries in the SWIO has been limited to a few fisheries projects, including attempts to establish the joint exploitation of the fisheries that did not go beyond trial phases (Association thonière 1990; Kasprzyk 1996). For example, the Western Indian Ocean Tuna Organisation (WIOTO) was formed in 1991 to counter the dominance of French and Spanish vessel owners over the WIO purse seine fishery (WIOTO 1991).[3] It committed members to the regional harmonisation of fisheries policies; collaboration in members' relations with distant water fishing nations to increase benefits from tuna resources; cooperation in fisheries surveillance and enforcement; and mutual access to the EEZs of WIOTO members (Marashi 1996; Michaud 1992). Several coastal state observers saw genuine benefits from the WIOTO (Campling 2012b), but it was a still-born institution. Only a handful of members remained by the mid-1990s (Seychelles, Mauritius, Comoros and India), other parties to the organisation did not appear to take it seriously (Marashi 1996; WIOTC 1991), and France undermined the organization because of the explicit challenge to its tuna fleet (Campling 2012b).

We argue in this paper that while sub-regional initiatives have helped the management of tuna fisheries, they have not contributed to the construction of a regional identity nor built a strong tuna-related collaboration. Due to their socio-economic interests, their historical entanglements with DWFNs, and the current highly capitalized model of resource extraction, the countries of the region are struggling to create a unified voice and vision regarding tuna fisheries. The paper proceeds in stages: after a description of the methods we present the historical background of SWIO regionalism. We then discuss regional realities at three scales: locally through local fishers and tuna workers, then at national and regional scales. Finally, we investigate the role of the biophysical dynamics of tuna and the sea in shaping regional interactions. We conclude with some pathways towards the construction of the 'Indianoceania' regionalism through tuna fisheries.

[3] Signatories to the Convention establishing the WIOTO were Comoros, India, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka and Tanzania.

2. Conceptual approach and methods

By regionalism we refer to regional collaboration and cooperation between countries as well as the social construction of a regional identity through contextualized practices and narratives (Paasi, 2003; Tarte, 2014). To explore these dynamics, we draw on three sets of conceptual tools. First, we use insights from regional political ecology to unravel the complexity of regionalism in the SWIO and its manifestation through tuna fisheries. Political ecology has been mainly used as an approach to understand the role of political economy dynamics in environmental change and in turn how the latter conditions the realms of possibility of the former (Blaikie & Brookfield, 1987; Peet et al., 2011; Robbins 2012). It can also involve adopting a post-structuralist outlook to analyze how discourses, identities, and policy narratives shape practices, including natural resource management (Agrawal, 2005; Forsyth, 2003; Gautier & Benjaminsen 2012). Regional Political Ecology (RPE), as a variation, has been interested in the idea of the region through a range of conceptual lenses. Originally established to integrate the local use of resources with broader structural processes and environmental conditions (Blaikie & Brookfield 1987), it has evolved to include discussions of how scalar dynamics politicize environmental problems at the regional level (Rangan & Kull 2009) and investigations of the discursive construction of regions and regional classifications (Galt, 2016; Simon, 2016). As Simon puts it "regions are performative and capable of doing work analytically, discursively and materially" (Simon, 2016, p. 199). Through examples drawn from tuna fisheries, we assess the SWIO as a region, using socio-economic and environmental dimensions, and reveal connections across multiple scales. The use of regional political ecology is particular relevant to our account of regionalism through tuna fisheries as we pay particular attention to 'natural' resource use and politics in the making of a region.[4]

Second, we attempt to place national decision-making regarding tuna in a more structural and historical context. We draw from insights and inputs regarding the political economy of tuna fisheries (Guillotreau & Le Roy 2001; Barclay and Cartwright 2007; Guillotreau et al. 2008; Havice and Campling 2010; Barnes and Mfodwo 2012; Campling 2012a; Campling and Havice 2018) and place tuna extraction in the broader context of natural resource industries where competitive interactions

[4] For a theorisation of the role of 'natural' resource industries in the global economy, see Baglioni and Campling (2017).

among actors can lead to unsustainable use of resources (Campling and Havice 2014; Longo and Clausen 2011; McWhinnie 2009; Baglioni and Campling 2017). We also explore the role of geopolitical and economic factors in influencing regional dynamics and the implications for cooperation among the three countries studied. In this process we aim to "comprehend the role of large geopolitical institutions and environmental change" (Bigger & Neimark, 2017, p. 20). In particular, we analyze the role of extra-regional institutions such as the EU in shaping access to tuna and regional cooperation in the region (see also, Campling 2017).

Third, we explore the role of ecological processes in shaping interactions between countries and the implications for regionalism in the SWIO. The materiality of non-human actors like tuna and the ocean "play an important political role in explanation" (Robbins, 2003, p. 643). This reflects a 'material turn' in political ecology (Bennett, 2010; Walker, 2005), which explores the active dynamics of non-humans and highlights the importance of biophysical ecology in socio-environmental research. Specifically, we discuss the role of tuna behavior and the physical geography of the sea in shaping interactions between countries involved in tuna fisheries.

The results presented here are based on interviews, analysis of official reports, and observations in Madagascar, Seychelles, and Mauritius, as the principal independent tuna economies with active tuna ports and canneries (Comoros, Mayotte and Reunion have a less important role in the industrial tuna fishery). Semi-structured interviews were used to gather perspectives of stakeholders regarding regional collaboration in tuna fisheries at different levels. Stakeholders were identified by contacting the national fisheries agency as well as through spending 90 days in each country in well-known fishing villages and at the fishing ports. The interviews took place in 2017 and the first quarter of 2018. Stakeholders included 35 small-scale fishers and industrial tuna boat crew, 18 government officials including staff of fisheries departments, monitoring and surveillance officers and statistic officers, 5 tuna processing company staff members and 4 NGO representatives involved in fisheries management (Table 1). We also collected information regarding regional projects linked to tuna fisheries through the analysis of reports from governmental archives and the Indian Ocean Tuna Commission (IOTC), as well as online content found on the IOC and EU websites. We triangulated these sources and captured the interactions between countries of the SWIO and DWFNs through observations of two regional meetings: the

154 22nd session of the IOTC in May 2018 and the Eighth Session of the Southwest Indian
155 Ocean Fisheries Commission (SWIOFC) in March 2017.

156

Stakeholder interviewed	Type of questions asked
Small scale fishers	Interaction with other fishers and knowledge about other fishers in the SWIO region
Industrial tuna boat crew	Knowledge about other crew and fishers working in the SWIO and location of fishing activity and landing ports
Government officials	Stakes regarding tuna fisheries and interests and obstacles to a regional collaboration in tuna fisheries
Processing company staff	Knowledge about and interaction with other cannery staff from the SWIO region
NGO representatives	Drivers and obstacles to regional collaboration in tuna fisheries in the SWIO

157 Table 1: Types of stakeholders interviewed and content of interview questions

158 **3. SWIO regionalism and the case study countries**

159 The Indian Ocean is typified as "a space of trade" (Steinberg, 2001). It has long
160 experienced exchanges of goods, people, animals and plants both before and after the
161 colonial period (Beaujard, 2005; Boivin et al., 2013; Fuma, 2013). The Southwest part
162 of the Indian Ocean is a discrete – and somewhat more marginal – region in these
163 historical networks of exchange around the rim of the ocean (Beaujard, 2005; Moorthy,
164 2010), with Seychelles and the Mascarene islands thought to be uninhabited before
165 European colonialism. Commonalities between the countries of the region include their
166 insular characteristic, their strong colonial history and the different waves of settlements
167 creating from Africa, south and south-east Asia (Horeau 2013; IOC, 2013). As a result
168 of these commonalities, it might be expected that "indianoceanic" space be cultivated
169 among people in the region, linking shared history, identity, cultural heritage, and
170 development aspirations among the islands of Comoros, Madagascar, Mauritius,
171 Mayotte, Reunion, Rodrigues, and Seychelles. However, such an identity is not yet
172 strong. Indeed, "indianoceanic" identity is mainly promoted by the Indian Ocean

Commission (IOC) through various projects and collaborations between the member countries ranging from diplomacy to external trade and economic development, and from environmental protection to regional cultural interactions. Established in 1984, the IOC originally consisted of the five island countries: Madagascar, Seychelles, Mauritius, Comoros, and France (for Reunion). A formative objective of the IOC is to improve relations and cooperation between these countries. Funded by diverse sources including the member countries and especially major donors such as the EU and the World Bank, the IOC has carried out several tuna-related projects, including SMARTFISH, "des thons et des hommes" and the Regional Fisheries Monitoring Program (PRSP, or Programme régional de surveillance des pêches).

Madagascar, Mauritius and Seychelles are at the center of the SWIO tuna fishery – each having an active industrial fishing port and tuna canneries. However, they have distinctive socio-economic contexts and different levels and types of articulations with the tuna resources and the industry (Table 2). Socio-economically, Madagascar is much poorer than its two neighbors, with around 25 million people, it is ranked at 154 (out of 188 countries) in the Human Development Index ranking, while Seychelles and Mauritius have much smaller populations and are classified as countries with high human development, ranked respectively at 63 and 64 (UNDP 2016). Tuna fisheries play a central role in Seychelles' economy compared to in Mauritius, while the latter's GDP is almost 10 times higher than Seychelles (Sellström 2015, UNDP 2016). Madagascar's economy is focused on agricultural cash crops and has an under-developed national tuna fishery mostly composed of small-scale coastal fishing and a handful of semi-industrial boats. In Mauritius, has a more developed small-scale tuna fishery and a semi-industrial fleet. Mauritius also hosts the main transshipment port for foreign longliners operating in regional waters. In Seychelles, tuna fisheries are at the center of the economy. In 2011, the tuna industry contributed to more than 90% of exports (Marsac et al. 2014). Seychelles has an important national semi-industrial tuna fleet and a small scale fishery that also catches tuna, without targeting it. Seychelles plays a key role in the tuna fisheries of the SWIO, having the most important port for the purse seine vessels to land and transship, largely by virtue of being in the middle of tuna fishing grounds (Campling 2012a). The three countries all host industrial fishing by European and Asian fleets. Data available within the three countries are more comprehensive regarding purse seine, which land at the three ports, compared to

206 longliners which either land their fish in Mauritius or transship at sea.

	Madagascar	Mauritius	Seychelles
Approximate yearly catch within the EEZ	15,000 MT	4,500 MT	80,000 MT
Landing for canneries from purse seiners	13,295 MT in 2016	53,256 MT in 2014	65,500 MT in 2016
Transshipment/ landing at port	5,823 MT in 2016	~140,000 MT/year	262,798 in 2016
Employment generated from the industrial sector [direct and indirect]	7,500 in 2017	7,207 in 2015	7,000 in 2009

207 **Table 2:** Key articulations with tuna extraction in the three islands.

208 Sources: For Madagascar: Breuil, C. & Grima, D. 2014; OEPA 2017; USTA 2017;
209 For Mauritius: COFREPECHE et al. 2016; Gillet 2011; GoMU 2017a; World Bank
210 2017, World Bank 2017, World Bank 2017 (Appendix 2);
211 For Seychelles: Campling 2012b; Gillet 2011; IOTC 2017; IOTC 2018
212

213 ## 4. Regionalism among tuna fishers and laborers

214 In this section we investigate the perceptions of local people working in tuna fisheries
215 on the region. We unfold discursive representations of the region as seen by those
216 working on tuna. We argue that the proposed idea of 'Indianoceania', strongly built on
217 the shared French heritage and language , supplemented by shared elements of creole
218 culture for the Mascarenes and Seychelles, as well as common history, overlooks the
219 opaque connections between local people working in tuna fisheries. This creates a
220 region where stakeholders involved in tuna are disassociated with regional identity. We
221 illustrate this argument with two examples.

222 ### *4.1. Tuna workers and an 'Indianoceania' identity?*

223 In a press release in 2016 on regional monitoring, the IOC emphasized the importance
224 of tuna fisheries for the region as a common natural capital (IOC, 2016). Yet,
225 discussions with local stakeholders involved in the tuna fishery on regional identity
226 shows a more nuanced picture.

Interviews with fishers in the three countries studied build a picture of an 'Indianoceania' region with disconnected people when it comes to tuna fisheries. Amongst 35 fishers interviewed, only five had knowledge of interactions in tuna fisheries: two fishers in Madagascar knew there were other Malagasies working in the Seychelles cannery, one in Mauritius knew that some Seychellois were also fishing tuna in the waters of Mauritius, and two fishers in Seychelles had contacts with Malagasy and Mauritian fishers. Very few knew about the potential in the different countries of tangible collaboration in tuna fisheries. Crews of semi-industrial boats in Seychelles for example are mainly Sri Lankan. When asked about working with other fishers from the region, 20 fishers in Seychelles could only mention Sri-Lankans. While the latter have built skills in longline fishing over decades (Hewamanage, 2010; Pajot, 1978), regional initiatives have not succeeded in linking tuna fishers within the region who could benefit from each other's strengths, such as tuna fishers from Madagascar, or local fishing vessels in the Seychelles, or fishes to use for bait from Mauritius.

Involvement of local people in the tuna industry occurs more frequently through work at the canneries. For instance, Malagasy laborers work in Mauritius and Seychelles. One might assume that such working relations build regional identity through working on a shared resource. However, the reality depicts a common picture of work migration for higher wages without local integration (de Haas, 2010; Craig, 2015). For instance, Malagasy tuna workers in Seychelles feel marginalized. a Malagasy worker based in Seychelles for three years stated "they do not really like us here, they think we are only poor and low level workers for the cannery" (Personal Communication (PC) 01, cannery worker). While migrant workers recognize the improved social and economic conditions they are experiencing in Seychelles compared to Madagascar, the tuna workers do not feel integrated nor part of an 'Indianoceania' community (PC 02 and 03, cannery workers in Seychelles). The geographical proximity of 'Indianoceania' countries has allowed the practice of work migration, yet everyday practices and experiences of the workers do not appear to have led to the development of a regional identity.

These two illustrations show that at the local level, tuna fishers and cannery workers see themselves more as individuals than part of a regional community linked by the fishery. Despite the region being advertised as 'islands, close and united' (IOC, 2013), local livelihoods are detached from regionalism.

4.2. Bringing regional artisanal fishers together

To address the previous lack of connections between the Indianoceanic people, the IOC, under its SMARTFISH program, mainly funded by the EU, supported in 2015 the development of a federation of professional associations of small-scale fishers of the Indian Ocean (FPAOI for Fédération des pêcheurs artisans de l'océan Indien). By 2017, the FPAOI included 18 professional organizations and associations representing artisanal fishers in the five member countries (FPAOI, 2017). The aim of the federation, according to a press release, is "to allow an efficient and informed participation of fishers to decision-making processes regarding the management of fisheries in the Southwest Indian Ocean" (IOC, 2015a). While the activities of the Federation are aimed at fisheries in general, it is also involved in activities linked to tuna fisheries. The Federation has brought members together for workshops (for instance on fish handling), and for retreats to develop a regional management plan for coastal tuna fisheries (IOC, 2018). It has also undertaken advocacy at the IOTC for better tuna management, such as reducing the use of fish aggregating devices or criticizing the historical catch approach of distant water fishing nations in discussions of allocations as impeding the management efforts of coastal states (FPAOI, 2017; Personal observation). When interviewed about involvement at IOTC, one member of the FPAOI declared "the presence of small-scale fishers at the IOTC has helped the adoption of more management measures since 2016, we have expressed the high stake that the fisheries represent for us for livelihood and food security" (PC 04, fisher member of FPAOI). These activities of the FPAOI effectively bring fisher representatives together and involves them in policy-making.

An important point here is that the principal source of funding for FPAOI activities to-date is the EU through the IOC; the ability of FPAOI members, the fishers, to undertake activities is dependent on this funding. This may be problematic as the EU is the same actor that fiercely negotiates within the IOTC to adopt measures that are less beneficial to the local fishers of the region (Hussain, 2018) or increase its fishing opportunities in countries' EEZs at a questionable price (Standing, 2016). This indirect dependency on an actor with sometimes conflicting interests represents a paradox for the Federation's viability in the longer term.

Here we can see that the FPAOI represents an important opportunity in building the identity of a region of tuna fishers through connecting small-scale fishers and

building a regional voice in policy making. However, the current dependency of the Federation upon external funding could jeopardize its success if the it does not develop independent mechanisms to sustain itself in the future.

5. Geopolitics, dependency, and regional cooperation

A second factor that intervenes with regionalism in the SWIO is the geopolitical economy (Bigger and Neimark, 2017; Glassman, 2017) of tuna fisheries. Here we investigate larger-scale institutional and power-laden processes at work in the production of region-defining resources like tuna, recognizing that "geopolitics are always being expressed spatially and socio-spatial relations always being expressed in part through forms of geopolitical power" (Glassman, 2017, p.411). In the context of tuna fisheries in the Indian and Pacific Oceans, Havice and Campling have shown how the development of tuna fisheries over the past few decades has intertwined global market regimes, commodity demands, technological and organizational innovation, and the ecology of the resource, leading to dependency by coastal states on distant fishing powers but also building leverage for local claims to resource sovereignty (Havice and Campling 2010; Campling, 2012a; Campling & Havice, 2014; Havice & Campling, 2017; Havice, 2018).

Drawing on these insights, we make the point that SWIO countries and especially the three countries studied have been entangled historically and economically with distant water fishing nations (DWFNs) which influences oscillations in their positions when it comes to negotiating about tuna fisheries. We provide three examples of problematic regional integration: catch allocation discussions, surveillance and monitoring, and bilateral fishing access agreements.

5.1. Catch allocation dilemmas

Negotiations over catch allocation were initiated within the IOTC in 2011 and continue to this day (IOTC, 2011; IOTC, 2018). The three countries studied and the DWFNs accessing tuna resources in SWIO waters are member parties of the IOTC and actively involved in this discussion. At the meeting we observed in 2018 there was a substantial divide between the members of the IOTC regarding catch allocations. On one side is a group of DWFNs, particularly Japan, Korea, China, France and Spain (the latter two represented by the EU), who dominate the industrial extraction of tuna in the Indian

Ocean. On the other side, there are the 21 coastal states of the Indian Ocean, including the three islands studied, known as the G16 group (named after Article XVI of the IOTC agreement, acknowledging the sovereign rights of coastal states over living resources in their EEZs) (IOTC, 1993). The two sides have put forward distinctive proposals. The DWFNs, led by the EU, propose to allocate 85% of the catch based on historical catch in the Indian Ocean (IOTC, 2018), which would give DWFNs effective rights over the vast majority of future catches. Whereas a proposal from the G16, led by Maldives, seeks to allocate catch based on more criteria: a baseline for all coastal states, historical catch, and supplementary allocations for catch on the high seas and for small island states and developing coastal states (IOTC, 2018).

Madagascar, Mauritius and Seychelles had three very different positions regarding the G16 proposal: Seychelles was a strong co-sponsor of the proposal; Madagascar and Mauritius were not co-sponsors. The delegation of Seychelles for example pressured the Commission to make progress on the allocation issue, whereas DWFNs wanted a more cautionary approach of looking in more detail at the proposals through simulations (IOTC, 2018; pers. obs.). The Seychelles position can be explained by the increasing development of its national tuna fisheries (Seychelles-flagged boats) as well as a long-standing active engagement in seeking to capture greater gains from the SWIO tuna industry (e.g. Campling 2012b). Mauritius used the IOTC fora to make sovereignty claims over the Chagos Archipelagos (administered by the UK as the British Indian Ocean Territory), repeatedly asking that the UK does not received any allocation due to its illegitimate presence in the Indian Ocean, despite the UK not having expressed support for any of the two proposals (IOTC, 2018; pers. obs.). Madagascar kept largely silent, only intervening to ask for a collaborative approach and recognition of the rights of the coastal states (Pers. obs.). When asked about this position, one delegate declared “we have to see how things unfold, we support the G16 but this is a very sensitive issue for us” (PC 05, government official).

These interactions demonstrate an absence of ‘Indianoceania’ regional collaboration and cooperation. The three countries studied have distinctive priorities and are not acting as a harmonized region. In effect, coastal countries are using tuna discussions to defend territorial sovereignty, illustrating Havice’s (2018) ‘more than territorial’ way of reclaiming state power. Geopolitical struggles between the UK and Mauritius prevented the latter from joining the G16 position, instead prioritizing its

sovereignty claims. Seychelles shows itself as a geopolitical leader amongst the coastal countries and therefore carries a position in favor of the G16 proposal. Madagascar, more reliant on foreign aid for the development of its fisheries, adopted a more cautionary approach.

5.2. Foreign aid dependency and regional competition

A second example of how geopolitical and economic entanglements contribute to limited regional integration is the aid dependency of coastal countries on DWFNs. Valuable tuna fisheries are an important dimension for these entanglements. The European Union, Japan, and China are major donors of development aid and fisheries aid. The EU is for example engaged in a national development aid program amounting to €518m in Madagascar covering governance, infrastructure and rural development (European Union, 2016a). In 2017, Japan invested €370m in the extension of the Port of Toamasina in Madagascar (Hanazaki, 2017). In Mauritius and Seychelles, where the level of economic development is higher, there are also contributions from those DWFNs. Under the 11th European Development Fund for example, there is a €9.9m program for Mauritius (European Union, 2016b) and a €2.2m program for Seychelles (European Union, 2014a). Aid contributions influence how coastal states interact with DWFNs and with each other, as seen in the Pacific Islands region for example (Tarte, 1997).

Fishing access agreements play a key role in the making of foreign aid in the SWIO region. The EU is the most prominent example, where revenue from access agreements includes sectoral support dedicated to the improvement of fisheries and fisheries policy in the host countries. In the three countries studied, this sectoral support has over the years contributed to the construction of core infrastructure such as fisheries agency buildings and ports. It has also served to fund different projects within fisheries departments including the registration of small-scale fishers in Madagascar, the improvement of port infrastructure used by small-scale fishers in Seychelles, and the improvement of patrolling capacity in Mauritius (European Union, 2014b; GoS 2011, 2013; COFREPECHE et al., 2015). Such contributions, which date back to the beginning of SWIO industrial fisheries in the 1980s, have created a strong relation between the independent island countries involved in fishing access agreements with DWFNs. These interactions can constitute drivers of different positions taken by governments at regional tuna meetings such as the IOTC (PC 06, government official;

Tarte, 1997). This appears to be a contributing factor preventing countries like Madagascar and Mauritius from joining or strongly supporting the G16 proposal discussed above.

Another example of the role of broader political economy dynamics on the relationship between coastal states is how it fosters competition more than cooperation. The three countries studied all have landing ports, canneries and fishing grounds with different levels of productivity, as illustrated in Table 2 (Kaplan et al., 2014; POSEIDON et al., 2014). The three canneries were originally built in collaboration with foreign private companies. Mauritius saw its cannery built in the 1970s with funding from Japanese companies (Campling, 2012b, p. 434), Seychelles in 1987 in collaboration with French and Spanish companies (Campling, 2012a; Marsac et al. 2014, p. 222), and Madagascar in 1990 with French companies (Gilbert & Rabenomanana, 1996). While those infrastructures all brought economic development to the countries, they were not built with a regional vision. Fishing operators land at the most economically efficient port, mainly Port Victoria, Seychelles and at as a last resort in Antsiranana, Madagascar. Industrial tuna fisheries in the SWIO have been driven by a continuous need to satisfy demands of commodity production and by capitalist logics of extraction (Campling, 2012a). This unequal dynamic of extraction is not uncommon in marine fisheries and especially in tuna fisheries where mainly foreign fishing fleets use the resources to maximize their profitability at the expense of host countries, themselves often constrained by the need for revenue, leading to unsustainable levels of catch (Campling and Havice 2014; Longo and Clark 2012, Schurman 1998). Governments seeking to sustain economic benefits from the fishery are favorable to access agreements and try to improve port infrastructure to encourage the landing of tuna in their country. Regional integration in tuna fisheries is thus challenged by the global economy of tuna production that puts coastal and island countries in competition among each other, undermining their capacity to harmonize their actions.

5.3. Successful stories with grey areas

The region does exhibit examples of successful regional collaboration. These are the regional monitoring program and the bilateral fishing access agreements between Mauritius and Seychelles. Their success, however, is tainted by geopolitical interventions, notably by the influential role played by DWFNs in these initiatives.

The most successful example of regional integration is the Regional Fisheries Monitoring Program or PRSP ("Programme Regional de Surveillance des Pêches"), an intergovernmental project led by the IOC. The program started in 2007, mainly funded by the EU. It encompasses a system of satellite data sharing as well as joint and collaborative surveillance in the EEZs of IOC members. Each member sends patrolling agents from their respective countries as well as patrol vessels that are jointly used for surveillance in the SWIO region (IOC, 2015b). In the past ten years, the program has been considered as having drastically diminished illegal fishing in the region through "45 regional patrols, 930 hours of air surveillance and more than 70 offences recorded" (IOC, 2016). When asked about the program, officials in the three countries acknowledged the improvement that the program has brought to the fight against illegal, unreported and unregulated (IUU) fishing in the waters of the IOC countries. In 2016, the EU committed another €1.5 million to support the program (IOC, 2016) and in 2017, a new declaration was made to confirm the interest of countries in pursuing the program and the fight against IUU (IOC, 2017). The PRSP is therefore a good illustration where common interests bring countries together. The program could thus be an important catalyst for regional identity. As expressed by an interviewee in Madagascar, "protection of the resources and fight against IUU bring cohesion in the region" (PC 07, patrolling inspector).

A point worth exploring is the involvement of the EU in the funding of the program and by extension its funding of IOC activities. The contribution of the EU serves its own interests in that the French and Spanish boats dominate the regional purse seine fishery (Campling 2012a) and this puts into question the argument that this is an example of regional interests coalescing. With its flagged vessels operating in the waters of IOC members, funding the PRSP largely benefits EU fishing operators, whose catches are protected from other non-EU entities fishing illegally in the region. One interviewee expressed that "countries have to be aware that the EU also gives us money to protect its own interest, they benefit from their own investment in the region" (PC 08, government official).

Another successful collaboration within the SWIO region is the reciprocal fishing access agreements between Mauritius and the Seychelles since the 1990s. These agreements allow reciprocity in terms of fishing grounds: specifically licensed boats from each country have access to both EEZs. For the agreement signed in 2017 for two

455 years, 25 fishing boats (purse seiners/longliners) from both countries were to operate in
456 the EEZs of the two countries at a fee of $110,000/$30,000 per boat per year to be paid
457 by Mauritius vessels and $30,000/$24,000 per boat per year to be paid by Seychelles
458 vessels (Seychelles Nation, 2017). Considering that neither of the two countries have
459 national industrial purse seiners and that they both have a limited number of national
460 longliners (GoS, 2016; GoMU, 2017b; pers. obs.), it can be concluded that the
461 agreement covers boats that are foreign-owned but flagged in one or the other country.
462 Foreign operators from Spain, France and Taiwan flag their boats from Mauritius or
463 Seychelles against a flagging fee. In the Seychelles for example, 13 purse seiners and 45
464 longliners used the Seychelles flag in 2015 (GoS 2016). Flagging can be seen as
465 beneficial for both parties: it adds to the national fleet of the coastal countries, provides
466 a flagging revenue, and effectively allows foreign fishing companies to use more
467 vessels than those authorized under a bilateral agreement. Such strategies are however
468 questionable. They increase fishing capacity in the region at a time where the IOTC is
469 trying to implement measures to rebuild the tuna stock (IOTC, 2017). The fishing
470 activities of those vessels also present other challenges, such as the difficulty of obtain
471 accurate statistics of catch and effort, or the fact that they may fall under dubious tax
472 regulations and ambiguous labor standards (Campling & Colás 2017).

473 This section has shown that cooperation regarding tuna fisheries at the regional
474 level is paved with socio-economic and geopolitical obstacles. Existing successes
475 remain dependent on external actors that ultimately benefit from both the collaboration
476 and lack of regional agreement.

477 **6. The role of tuna and the sea**

478 Our third entry point to discussing challenges to regionalism in the SWIO is the role of
479 biophysical and geographical aspects of tuna resources and the sea in the making of the
480 region. We look at ways how relationships, interactions and associations between
481 entities – humans and non-humans – stabilize or disrupt a particular socio-political
482 order (Haraway, 2003; Robbins, 2012; Whatmore, 2002). Campling (2012a), for
483 example, showed that the diversity of tuna species, their biological characteristics but
484 also their migration patterns influence conditions of production, requiring fishing
485 operators to use technology and specific fishing methods.

There are various species of tuna, from the five main commercial species including albacore, bigeye, bluefin, skipjack, and yellowfin, to coastal species such as bullet tuna, frigate tuna and kawakawa. They are present at different depths, distances from the coast and at different times of the year (Dagorn, 1994; Nikolic & Bourjea, 2013; Reygondeau et al. 2012). Tuna in the SWIO move between the countries' EEZs as well as across invisible lines dividing the EEZs and the high seas. Skipjack, for example, are highly mobile and undertake long distance movements. They can be found in the Mozambique channel and the waters of Seychelles between March and June then move towards the northwest Indian Ocean until around November (Campling 2012a; Fonteneau 2014). Other species can be found all year long in different countries' waters or undertaking a circular journey. Yellowfin and bigeye tuna for example are found in the waters of Madagascar, Mauritius and Seychelles between April and December and further offshore between November and March. Coastal tuna are mostly present all year in the coastal waters of the countries (Kaplan et al. 2014, Sabarros et al. 2017, analysis of the authors). Under the Law of the Sea, Article 62, tuna fall under the sovereign rights of states while in their EEZs and foreign fleets must negotiate fishing access agreements, while Article 64 requires regional cooperation. In the West and Central Pacific Ocean, purse seine access arrangements operate at a sub-regional scale, with Pacific island countries (PICs) cooperating effectively as a group in their Vessel Day Scheme (VDS) negotiations with DWFNs (Havice 2013; Fry & Tarte, 2015). The underpinning advantage that PICs enjoy is that tuna populations targeted in the purse seine fishery – skipjack and juvenile yellowfin – tend to migrate for the majority of their lives through the interlocking EEZs of these countries. With the result that access to the fish at most points requires cooperation with at least one PIC and thus, to survive commercially, DWFNs must cooperate with the VDS. The limits of this approach appear to be found in the PIC attempt to apply a VDS to the longline fishery, where target species – bigeye and adult yellowfin – tend to exist for considerable periods *outside* of EEZs, with the effect that some DWFNs have so-far been able to avoid participation and concentrate effort in the high seas (Campling et al. 2017).

In the SWIO, Madagascar, Mauritius and Seychelles each have individual access agreements with the EU and/or Asian fishing associations, a situation that has not changed since the 1980s (Gagern & van den Bergh, 2013; Le Manach et al., 2013). This difficulty of applying the approach used by PICs is that the catch of industrial fishing

519 and especially purse seiners in the Indian Ocean is mostly in the high seas. Individual
520 negotiations put each country in the position of negotiating with more powerful and
521 organized entities with access to better information (Standing, 2016). Furthermore, it
522 incentivizes countries to get the most benefit out of the tuna resource while it is in their
523 waters. One interviewee when asked about fishing access agreements made the
524 comment that "tuna moves, if they are not caught in our waters, it will be caught in the
525 waters of the other islands around so it is a loss of revenue for the country to not have
526 those agreements" (PC 09, government official). Without working actively on a regional
527 access strategy, the movement of tuna populations can disrupt the regionalism that
528 countries are working towards and isolates countries in the negotiation sphere.

529 In addition to the movement of tuna, the geography of the sea itself plays an
530 important role. The productivity of the Indian Ocean is not homogenous and depends on
531 factors such as the summer monsoon winds, the periodic upwelling and the productivity
532 of local ecosystems (Kaplan et al., 2014; POSEIDON et al. 2014). Seychelles is blessed
533 with the most productive waters, especially for the commercial tuna species. Catches in
534 Madagascar's EEZ rely essentially on the Mozambique Channel's productivity for
535 species like yellowfin and skipjack and on the Southern Ocean for albacore, bigeye and
536 bluefin tuna, while Mauritius's waters are the least productive of the region (Fonteneau,
537 2010; Gillet, 2011). This variability in productivity implies that countries have different
538 levels of leverage in their access agreements negotiations, again undermining a common
539 approach to the access. Such differentiation ultimately mitigates against attempt at
540 regionalizing the tuna fishery or its governance.

541 It is worth elaborating on the jurisdictional reach of the island nations and its
542 relationship to control over resource access. The three case study countries all border
543 the high seas which means that tuna comes in and out of EEZs and is followed into the
544 high seas by industrial vessels. More than 50% of the catches by Seychelles' flagged
545 vessels (purse seiners and longliners) are made in the high seas (GoS, 2016). Similarly,
546 in 2014, 51% of the catches from EU purse seiners took place in the high seas
547 (POESEIDON et al. 2014, p. 84). Because the SWIO region is adjacent to large high
548 sea areas (in contrast to the PICs and the purse seine tuna species), countries do not
549 have control over the extraction of tuna resources beyond their EEZs. A 2018 study
550 using satellite data from fishing vessels showed that a high number of suspicious
551 transshipment activities were taking place at the border of EEZs (Miller et al., 2018). In

552 the current lack of control over fishing in the high seas, regional initiatives towards
553 management and access to the resources by SWIO countries will have limited success
554 without institutionally complex and politically risky innovations, that may well require
555 brinkmanship and the short-term loss of tuna-related revenues. Further, while the IOTC
556 has management authority over tuna fishing activities in the high seas, the adoption of
557 management measures within the IOTC is dependent on the political will of its
558 members who often have a challenging time to reach consensus on effective resolutions.

559 We have seen that tuna populations and the sea are important dimensions that
560 influence extractive strategies and limit the scope of political will. While tuna could be
561 a unifying resource requiring a regional vision, the current geopolitics and economics of
562 the fishery in the region make the materiality of the resources a barrier to collaboration.
563 Moreover, as a highly migratory resource, the state of the resources in national waters
564 will ultimately be affected by fishing activities in the high seas, which fall under the
565 management remit of the IOTC but which depends on the political will of IOTC
566 members for the implementation of measures.

567 7. Conclusion

568 The 'Indianoceania' vision clearly has some way to go before it takes hold within tuna
569 fisheries. Efforts have been made but those have limitations that need to be addressed.
570 A regional political ecology approach has enlightened our understanding on three
571 fronts. First, it showed that in tuna fisheries, a regional identity is largely absent at the
572 local level despite regional work migration and policy-related collaborations. Second, it
573 highlighted the operation of political-economic dependencies in geopolitical relations
574 and national decision-making regarding tuna management. Finally, it pointed to the role
575 of tuna populations and the socio-spatial Indian Ocean as crucial influences in access
576 struggles. In an attempt to contribute to transformative political research, the following
577 points are provided as pathways for the SWIO region to advance its regional identity
578 and integration in tuna fisheries.

579 A first action is an improved transparency on the role of foreign aid in tuna
580 access. As DWFNs and coastal countries are entangled in relations that include foreign
581 aid, trade and market access, and geopolitics, the lack of explicit mention of access to
582 resources, and tuna in particular, in foreign aid policy puts coastal states in an
583 intrinsically weak position when they are negotiating access to resources. It also needs

584 to be recognized that DWFNs are non-homogenous entities. The EU is a good
585 illustration with its visible contradictions in tuna fisheries in the Indian Ocean. While its
586 'foreign aid' arm is funding key projects to improve regional identity, collaboration and
587 capacity building, its 'commercial' arm undermines this potential either at the IOTC or
588 in fishing access negotiations. This demands caution from countries of the SWIO and
589 the IOC when receiving funding for regional projects and reflection on the real interests
590 of donors involved in tuna fisheries. As for the East Asian interventions in the region,
591 the limited knowledge on the subject needs to be addressed. Very little is known on
592 negotiations of access to tuna by East Asian DWFNs in the region and even less on the
593 link between East Asian foreign aid and access to tuna in the countries studied.
594 Increased transparency on this issue is a necessary but not sufficient step to benefit the
595 region and improve the current leverage that SWIO island countries are seeking to
596 build.

597 Second, we can say from our findings that the current situation will not really
598 contribute to regional identity, beyond a few EU funded projects. Programs aiming to
599 foster regionalism need to recognize that countries of the SWIO have as many
600 differences as they do commonalities. Resource extraction in itself, especially within a
601 capitalist logic, is a deeply challenging forum for fostering collaboration between
602 actors. An 'Indianoceania' vision and ultimately a regional tuna fishery is only possible
603 if the interests of all parties are considered and individual socio-economic contexts are
604 taken into consideration, including antagonisms. This difficult endeavor requires a
605 differentiated approach looking at the needs of each country that could be fulfilled by
606 collaboration with the others. Fishers could work together at the level of tuna fisheries,
607 by sourcing bait from each other and/or exchanging skills and knowledge. An improved
608 regional approach with a coordinated management across EEZs and building a more
609 shared identity might be useful to break the current relations of dependency on DWFNs.
610 Addressing issues in the high seas remains an important component. Ongoing
611 international negotiations for a new international treaty for the high seas could represent
612 a venue to provide some answers to this issue (Gjerde et al. 2018; ICTSD 2018).

613 Finally, it is necessary to decolonize interactions between coastal countries and
614 DWFNs. The historical and colonial past of coastal countries including the three
615 countries studied requires a change of paradigm from DWFNs, especially those of the
616 EU. The EU's speaks of 'sustainable partnerships' in setting up access agreements; but

this rhetoric should also be applied in negotiation practices – especially at the IOTC such as in its proposal for catch allocation. DWFNs have long claimed to have supported the capacity and development of coastal countries, but they need to better recognize that coastal countries now want greater endorsement of their sovereign rights over fisheries resources. Keeping as a core principle that highly migratory fisheries require cooperation for their sustainable conservation and utilization, it is only through equity and an agreement over what is 'sustainability' that parties will move forward and so might the 'Indianoceania' region.

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